

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (Original): A system for detecting the sliding of a wheel travelling along a track comprising:

a roller rotatable about a rotation axis, said roller disposed adjacent said track so that a wheel travelling along said track engages said roller and causes the roller to rotate about said rotation axis;

a rotation sensor associated with said roller for providing a rotation signal representative of the degree of rotation of said roller; and

a processor for calculating the degree of rotation of said roller from said rotation signal and comparing said degree of rotation with a pre-determined range of degrees of roller rotations and providing a signal indicative of sliding of said wheel when said degree of rotation of said roller is outside said pre-determined range.

2. (Original): The system according to claim 1, comprising a suspension system for supporting said roller.

3. (Original): The system according to claim 2, wherein said suspension system includes a bias device for biasing said roller into contact with said wheel.

4. (Original): The system according to claim 3, wherein said suspension system further comprises:

a housing which rotatably supports said roller; and, a frame to which said housing is pivotally coupled to enable said housing to pivot about a pivot axis substantially perpendicular to said rotation axis.

5. (Original): The system according to claim 4, wherein said bias device acts between said housing and said frame.

6. (Original): The system according to claim 1, further comprising a wheel detection mechanism for providing a wheel detect signal when a wheel is in contact with said roller.

7. (Currently Amended): The system according to claim 6, further comprising a housing which rotatably supports said roller; and, a frame to which said housing is pivotally coupled to enable said housing to pivot about a pivot axis substantially perpendicular to said rotation axis and wherein said wheel detection mechanism comprises a sensor for sensing motion of said housing about said pivot axis.

8. (Original): The system according to claim 6, wherein said processor calculates said degree of rotation while said wheel detect signal is present.

9. (Original): The system according to claim 1, further comprising a brake mechanism for preventing free rotation of said roller when not in contact with said wheel.

10. (Original): The system according to claim 1, further comprising a wheel direction sensor for sensing the direction in which the said wheel is passing over said roller.

11. (Original): The system according to claim 10, wherein said wheel direction sensor includes strain transducers on opposite sides of said rotation axis.

12. (Currently Amended): The system according to claim 11, further comprising a housing that rotatably supports said roller and wherein said strain transducers are mounted on opposite sides of said housing.

13. (Original): The system according to claim 6, wherein said processor is programmed with a counter to count the number of axles on which wheels passing said roller are mounted, where the counter is incremented by one when said wheel detection mechanism provides a wheel detect signal and said wheel direction sensor indicates said wheel passing in a first direction, and said count is decremented by one when said wheel detection mechanism provides a wheel detect signal and said wheel detection sensor indicates said wheel is passing second direction opposite to said first direction.

14. (Original): The system according to claim 1, wherein said processor is programmed with an algorithm for estimating tread wear of said wheel on a basis of said rotation signal.

15. (Original): A system for detecting the slipping or sliding of a wheel travelling along a track comprising:

a roller and rotatable about a rotation axis disposed adjacent said track so that a wheel travelling along said track engages said roller;

a rotation sensor associated with said roller for providing a rotation signal representative of the degree of rotation of said roller; and

a processor for calculating the degree of rotation from said rotation signal and comparing said degree of rotation with a pre-determined range of roller rotations and providing a signal indicative of said wheel sliding when said degree of rotation is less than said pre-determined range, and providing a signal indicative of said wheel slipping when said degree of rotation is greater than said predetermined range.

16. (New): The system according to claim 15, further comprising a wheel detection mechanism for providing a wheel detect signal when a wheel is in contact with said roller.

17. (New): The system according to claim 16, further comprising a housing which rotatably supports said roller; and, a frame to which said housing is pivotally coupled to enable said housing to pivot about a pivot axis substantially perpendicular to said rotation axis and wherein said wheel detection mechanism comprises a sensor for sensing motion of said housing about said pivot axis.

18. (New): The system according to claim 16, wherein said processor calculates said degree of rotation while said wheel detect signal is present.

19. (New): The system according to claim 15, further comprising a brake mechanism for preventing free rotation of said roller when not in contact with said wheel.

20. (New): The system according to claim 15, further comprising a wheel direction sensor for sensing the direction in which the said wheel is passing over said roller.

21. (New): The system according to claim 20, wherein said wheel direction sensor includes strain transducers on opposite sides of said rotation axis.

22. (New): The system according to claim 21, further comprising a housing that rotatably supports said roller and wherein said strain transducers are mounted on opposite sides of said housing.

23. (New): The system according to claim 22, wherein said processor is programmed with a counter to count the number of new axles on which wheels passing said roller are mounted, where the counter is incremented by one when a wheel detection mechanism provides a wheel detect signal and said wheel direction sensor indicates said wheel passing in a first direction, and said count is decremented by one when said wheel detection mechanism provides a wheel detect signal and said wheel direction sensor indicates said wheel is passing second direction opposite to said first direction.

24. (New): A method for detecting the slipping or sliding of a wheel traveling along a track comprising:

providing adjacent to the track, a roller rotatable about an axis of rotation, the roller being disposed so that a wheel traveling along the track engages the roller;

providing to a processor a rotation signal representative of a degree of rotation of said roller;

operating the processor to calculate the degree of rotation of the roller from said rotation signal and comparing the degree of rotation with a pre-determined range of roller rotations to provide a signal indicative of the wheel sliding when the degree of rotation is less than said pre-determined range, and providing a signal indicative of the wheel slipping when said degree of rotation is greater than said pre-determined range.